

Notice of Allowability

Application No.

10/759,810

Examiner

Marianne L. Padgett

Applicant(s)

LI, CHIEN-WEI

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/20/2007.
2. ☒ The allowed claim(s) is/are 36-40 & 50.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Art Unit: 1762

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

In the claims,
correct the typographical error in claim 36, line 3 by changing "(Ta₂O₅)" to --(Ta₂O₅)--.

2. The following is an examiner's statement of reasons for allowance: applicant's amendments have cancel all nonelected claims & amended claims under examination so as to clarify the scope of the description "uniform" (section 3 of the action mailed 7/6/2006), which had been rejected under 112, second, and have added additional limitations to the claims, which removed the art rejections set forth in sections 5 & 7-8 of the 7/6/2006 action, since while these combinations of references had teachings showing the obviousness of the layer structure with these materials & deposition techniques, they were all for making electronic devices, which are unrelated to the now claimed formation of a thermal barrier coating on a gas turbine engine, and since the overall combination of layers were used for totally different end-purposes, the present claims are sufficiently distinguished over the prior art previously applied.

Update of the prior art & search for new claim limitations did not find any art that showed unobviousness or lack of novelty in the claims as now written, however the following art is of interest for showing the state-of-the-art with respect to the gas turbine engine, tantalum pentoxide & columnar grain structure limitations. See patents and publications to Rigney et al. (2002/0172838 A1 \equiv 6,586,115 B2) & Darolia et al. (2005/0112412 A1 \equiv 6,982,126 B2), who deposit thermal barrier coating (TBC) having columnar grain structure via EB-PVD, onto gas turbine engine components, but the substrates are superalloys & the TBC coating is zirconia which may be stabilized were stabilized

Art Unit: 1762

for the lower portion of the TBC structure with tantalum pentoxide. The importance of the columnar grain structure deposited by conventional EB-PVD is particularly noted to be important for enabling desired thermal conductivity effects. Copending art to the same assignee, but different inventors, Bye et al. (2006/0246319 A1 = 11/119,657, not prior art & method claims canceled) & Strangman et al. (2003/0207013 A1 & 6,482,537 B1) have teachings or claims relating to the importance of columnar grain structure in barrier coatings, where the Strangman et al. references are directed to superalloys substrates, not silicon based & their columnar structures only may contain particles of tantalum pentoxide, but are not a layer thereof. The copending reference to Raybould et al. (2005/0112381 A1 = 10/719629, different inventive entity, pending, method claims canceled), while teaching depositing tantalum pentoxide via EB-PVD for an environmental barrier coating followed by a thermal barrier coating, where the substrate may be silicon nitride or silicon carbide, with intervening layers (abstract, [0043], [0045], [0048] & [0051]), has no teachings concerning columnar structure of the EBC or TBC, nor discussion of the gaps in such a structure, which are important components of the present independent claim 36.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

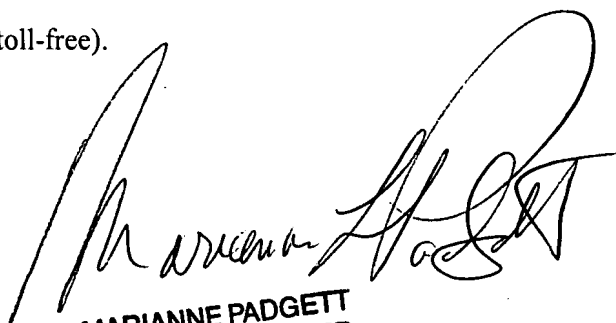
Art Unit: 1762

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

5/25/2007



MARIANNE PADGETT
PRIMARY EXAMINER